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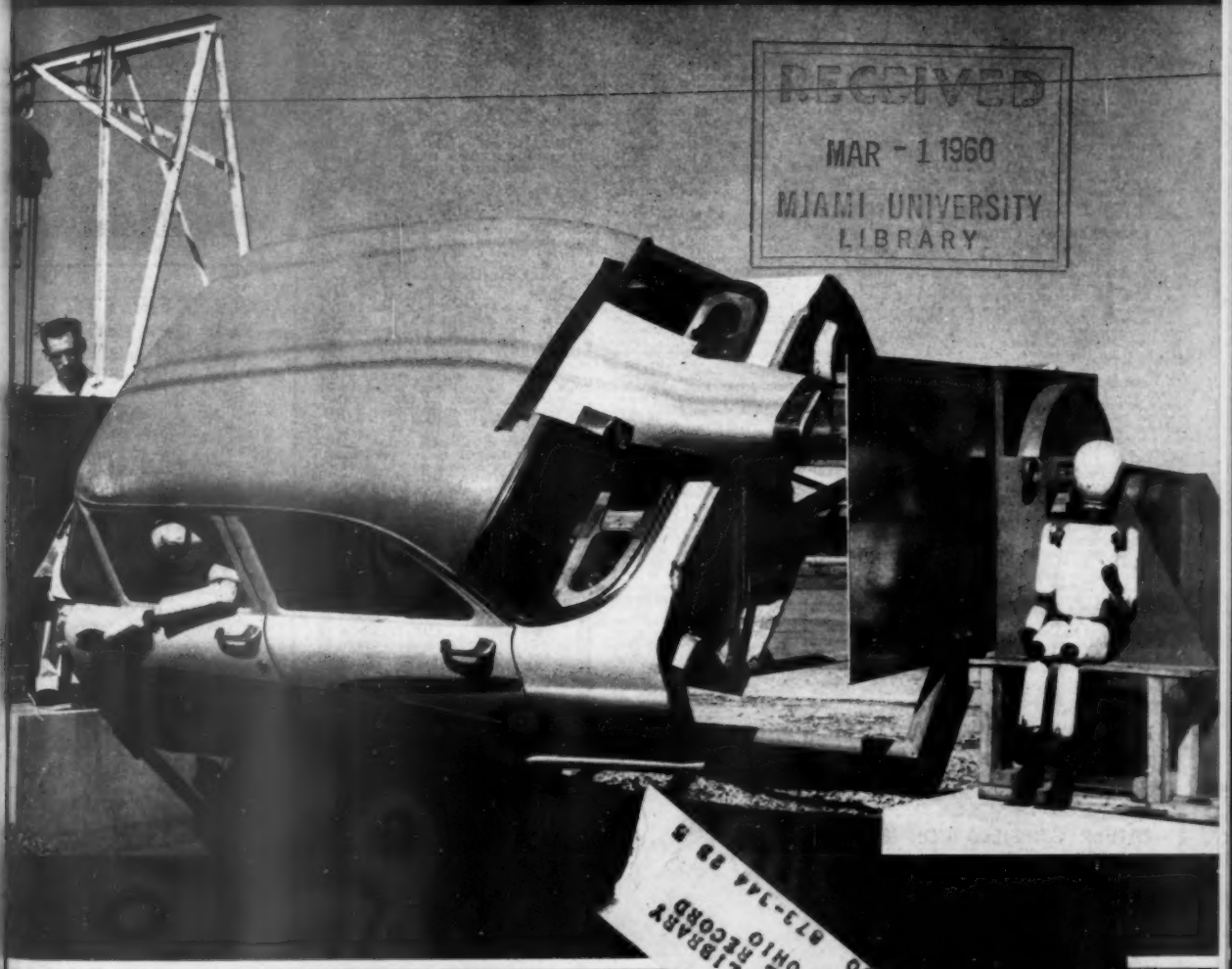
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



A SCIENCE SERVICE PUBLICATION

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WORLD'S FIRST PERSONAL SIZE DESK ADDING MACHINE!

Amazing Little Machine With Spinning Wheels and Trip Mechanism Adds Up To 9,999,999... Automatically!

Not a flat, vest pocket adder—not a gadget—no bewildering instructions to follow. Here for the first time is a real desk-type adding machine that works on the same scientific principle as electric office computing machines . . . but without electricity! It adds up bank statements, sales slips, inventories, expense accounts, super-market tapes, budgets, any adding jobs you have . . . within seconds of even $200.00 office adding machines! And then, this amazing machine clears itself with just a flick of your finger on the clearing bar. Yes! Instantly all the wheels inside spin back to normal—7 zeros flash into the easy-to-read answer windows—and it is ready for the next time saving, money saving adding job!

END MENTAL ADDING—FOREVER

No more adding figures in your head . . . scribbling numbers on paper . . . making mistakes that cost you time . . . and cost you money! Simply press the numbers down on this wonder-working little machine. The automatic trip wheel mechanism never makes a mistake. The total appears in big, clear, easy to read numbers in the answer windows—INSTANTLY and AUTOMATICALLY!

It keeps you within your budget . . . keeps you from overspending . . . protects you from the mistakes companies —even banks . . . often make . . . adds all the figures for your income tax . . . adds up stock dividends . . . checks expense accounts . . . plus a thousand other adding chores . . . and pays for itself a hundred times over in the money you save.

AN ITALIAN INVENTION

An eminent inventor in Italy discovered the secret of the fool-proof, non-electric, spinningwheel adding mechanism inside this machine. He had been trying for years to develop a real adding machine at a price for everyone . . . even in war-poor Europe. NOT another flat pocket adder that requires you to read long instructions before you can begin to operate it. Instead . . . he wanted a real, desk type adding machine . . . that anyone could operate, even a child . . . that would be automatic . . . fool proof . . . and, above all, within the pocketbook of everyone!

He found the answer after studying the spinning wheels inside electric computing machines. He came upon a way to let a person's hand supply the 'power' to the wheels . . . instead of electricity! Just imagine! He invented an adding machine designed so that the gentlest touch makes the wheels inside turn! After one complete turn . . . the first wheel automatically trips the next wheel . . . just like $200.00 electric machines! Nothing to remember. Nothing to do but press down the numbers to be added. Everything else automatic!

When the Italians . . . famous for smaller automobiles and smaller motorcycles . . . started manufacturing this revolutionary new smaller, non-electric adding machine, offices and individuals in Rome, Venice, Florence tried it. WHAT ACCLAIM IT MET WITH! Everywhere it added the longest columns of figures within seconds of the speed of electric machines. Giant companies gave it to secretaries . . . officers, salesmen. Efficiency of entire companies improved. Mistakes were cut down.

And from individuals came even more glowing stories. Instantly adding became a pleasure instead of an aggravating chore. Households became better managed . . . budgets stuck to . . . bills checked . . . mountains of figures added in no time . . . mistakes a thing of the past!

And when this remarkable adding machine was imported to this country, the acclaim was just as great! For here at last was what every home . . . every office . . . every store has been waiting for. The perfect, small, easy to use, automatic, desk model adding machine . . . in beautiful silver tone and blue finish, with big, easy to read numbers . . . and at a price so incredibly low that not a family or store or office can afford to be without it!

FREE TRIAL OFFER

How would you like to try this amazing new gleaming metal adding machine in your home, your office or your store entirely without risking a penny?

We want you to actually test it against automatic, electric adding machines. Compare it for speed, ease of use and accuracy. You must agree that it is almost as fast . . . and just as easy to use . . . you must agree that it will save you endless time, trouble, mistakes and money every week . . . or it won't cost you a penny.

Just push the numbers down. See how the most gentle pressure of your hand turns the wheels inside. See how it adds up to 9,999,999 automatically. And see how just a flick of the clearing bar on the side makes the numbers inside the answer window all whirl back to seven zeros . . . instantly!

Put this amazing adding machine on your desk. See how instead of being too busy to add . . . or in too much of a hurry to be bothered with a complicated pocket adder . . . from now on you will check every calculation . . . check all your bills, statements, estimates, inventories, budgets, reports . . . each in seconds . . . and never make costly mistakes again!

If you are in business, see how this precision adding machine will save you its unbelievable low price a hundred times over. Give one to every secretary, every clerk, every person who ever adds. See how it cuts out trips to your bookkeeper, saves time, improves the efficiency of your entire company.

You must be convinced that ADDIPRESTO is one of the most valuable and useful inventions you ever used or it won't cost you a penny.

Supply Still Very Limited
Mail Free Trial Coupon TODAY

Yes, it is impossible for you to appreciate the beauty, speed and efficiency of ADDIPRESTO until you actually see it and use it. Let us send it to you for one week's completely free trial.

The price of ADDIPRESTO is only $14.95. Remember, it is a real adding machine with spinning wheels and automatic mechanism . . . the same type as $200.00 office computing machines. But ADDIPRESTO works from the pressure of your hand without electricity! It will save you its remarkable low cost many times over. Because you will USE it . . . over and over . . . day after day. Don't confuse it with flat, hard to use, complicated pocket adders.

However, the supply of genuine ADDIPRESTO machines is strictly limited. The factory in Europe cannot meet the demand. You must mail the free trial coupon below at once. ADDIPRESTO is not yet sold in stores. Act now and get yours by mail.

ADDIPRESTO is shipped with protective plastic cover and GUARANTEE CERTIFICATE.

GUARANTEE

This original ADDIPRESTO is precision-made from the finest quality materials, and will give you a lifetime of accurate, effective performance. Unconditionally Guaranteed against defects in material or workmanship.

FOR THE FIRST TIME —Your Own Personal Desk Model Automatic Adding Machine!

Now you can keep ADDIPRESTO on your desk at home or office and never add anything in your head again. In SECONDS . . . perform almost any adding chore. No more costly mistakes. ADDIPRESTO's spinning wheels and computer type mechanism do the 'figuring' automatically!

PROVEN IN USE

Don't confuse this desk-model real adding machine with flat pocket adders. ADDIPRESTO is used by offices, stores, institutions, for adding jobs that demand true speed and accuracy. Used by giant corporations. Saves time, saves mental work, saves money. A real adding machine.

MAIL THIS NO-RISK TRIAL COUPON

OLIVER GARFIELD CO., INC., *Dept. SL-20-D*
108 E. 16th St.
New York 3, N. Y.

Yes, I want to try ADDIPRESTO, the new Italian Office Type Adding Machine. I will use the machine for one week without risk to me. It must be everything you say it is or I may return it and you will refund my money at once, no questions asked, and I will have used the machine entirely free.

☐ I enclose only $2.00. You may bill me for the balance ($12.95 plus postage) after my 7-day FREE trial period.

☐ I enclose $14.95 (check or money order) as payment in full. This way I save over $1.00 in postage and handling charges. Same guarantee . . . same 7-day FREE trial!

NAME .....

ADDRESS .....

CITY ..... ZONE..... STATE.....

☐ QUANTITY BUYERS SAVE! 2 Machines only $13.95 each. 3 to 5 Machines only $12.95 each.

AGENTS! SALESMEN!

THE BIGGEST MONEY-MAKER YOU HAVE EVER KNOWN!

ADDIPRESTO is the greatest goldmine you ever saw. Simply show this beautiful, gleaming metal adding machine with spinning wheels and automatic trip mechanism . . . the same type as $200.00 electric computers. Then make this eye opening demonstration: add a 6-INCH LONG COLUMN OF FIGURES in 30 SECONDS! After that there's no selling . . . no arguing. You can't keep people from buying! It's true. 8 out of 8 sales is nothing. Every home, every office, every store needs it. Send for yours today and get started to the biggest money you have ever known. There is no competition. There is no other machine like ADDIPRESTO.

MAIL COUPON NOW!

NUCLEAR PHYSICS

25 Nations May Join Club

France now holds fourth place in the atomic weapons club. Many scientists fear that 25 other nations will start to develop their own atomic bombs.

TWENTY-FIVE NATIONS may scramble for fifth place in the atomic weapons club.

Fourth place goes to France, who follows the Big Three, Great Britain, Russia and the U. S. The scramble could be sparked by the recent detonation of an atomic weapon by the French.

For this atomic explosion brings to reality one long-dreaded nightmare embedded in the minds of experts, the predicted possession of nuclear weapons by other than the three great powers.

Since shortly after World War II, many experts have thought and talked of this problem as the "N'th country problem." The "N" represents an unknown large number.

Three scientists, Dr. William C. Davidon, a physicist at Argonne National Laboratory, Dr. Marvin I. Kalkstein, nuclear chemist at the Air Force Cambridge Research Center, and Christoph Hohenemser, a graduate student in the physics department at Washington University, studied this problem for the National Planning Association.

Among their conclusions were these arguments: Besides France, 11 nations have the scientists, money and technology to begin a nuclear weapons program soon. They are West Germany, East Germany, Japan, Italy, India, Sweden, Switzerland, Canada, Belgium, China and Czechoslovakia.

Yugoslavia, Poland, Hungary, Finland, Austria, Australia, Denmark and the Netherlands also have the money and the technology but have limited sources of top scientific manpower. Six countries—Argentina, Brazil, Mexico, Norway, Spain and the Union of South Africa—are economically capable but limited in other ways. Nothing can be expected from them for at least five years.

Of course, other nations could join the "club" by obtaining the weapons from present members.

The problem of enemy nations possessing atomic weapons is readily apparent. But friendly nations' possession of the bombs causes problems too because, usually, development of the bomb drains resources otherwise used for military developments useful in limited wars.

Because the United States has put such faith in deterrent power, it is important that America's allies retain limited capabilities, observers believe.

France's possession of the bomb also poses problems. Will it make the USSR even more insistent on maintaining European satellites as a buffer? Will it make control of testing impossible?

Competent experts have criticized French expenditures to develop the bomb—especially since France seems to have no heavy aircraft capable of delivering the bomb.

But the prestige of bomb possession is important in world affairs and may tempt other countries besides France.

Science News Letter, February 27, 1960

MEDICINE

Sandbox Set Gets Ulcers

YOUNGSTERS AS SMALL as those in the sandbox league can develop ulcers. Others can develop ulcers that remain undetected until adulthood.

Ulcers are not rare in youngsters, three Chicago physicians report in the American Medical Association Journal of Diseases of Children, Feb., 1960.

The true incidence of peptic ulcer in children cannot be evaluated on the basis of the recorded cases, since these undoubtedly represent a small fraction of the total number of children with the disease. In many cases, the youngster exhibits no symptoms, and the condition is identified only at operation or autopsy, Drs. Alberto Ramirez Ramos, Joseph B. Kirsner and Walter L. Palmer of the University of Chicago report.

Studies have revealed that of 1,000 adult patients with duodenal ulcer, 26 had symptoms traceable to as early as four years of age. Of 1,000 gastric ulcer patients, 16 had symptoms that dated from childhood.

From their own experience with 32 cases of peptic ulcer in children up to age 15, they conclude that chronic peptic ulcer in children occurs in boys more frequently than girls. Peptic ulcers occur on the mucous membrane of the esophagus, stomach or duodenum as the result of the action of the acid of gastric juices.

They also found that the symptoms of peptic ulcer in children are vague until puberty when the ulcers begin to resemble those of adults and that children suffer from more duodenal than gastric ulcers. Medical management, which includes avoiding foods and medicines that irritate the gastrointestinal tract, frequent antacids and sedation, works effectively in the majority of children.

As in an adult, the doctors say surgery may be necessary in childhood peptic ulcer complicated by hemorrhage or perforation.

Just what causes peptic ulcer in children remains as undetermined as its cause in adults, they note. However, in four cases of acute peptic ulceration among the 32 children, cerebral damage and certain drugs may have been implicated as causative factors. Two patients, aged six and seven, developed acute peptic ulceration following a month's treatment with corticotropin, salicylates, and aspirin for rheumatic fever.

It could not be determined whether the drugs produced the ulcers, or irritated a susceptibility to ulcers, or whether rheumatic fever predisposed to peptic ulceration.

Science News Letter, February 27, 1960

MILITARY SCIENCE

Human Spies for Russia Cheaper Than Satellites

IT WOULD be cheaper for Russia to spy on the U. S. through normal channels than by putting a reconnaissance satellite into orbit.

A Pentagon official said, however, that a U. S. reconnaissance satellite could be highly valuable to America, because Russia does not publish in its daily newspapers the kind of information useful to military intelligence.

On the other hand, Russian agents in the U. S. can glean vast amounts of solid information merely by reading several major metropolitan daily newspapers and by gathering filling station maps, Government documents and trade statistics that are readily available to the public.

The Department of Defense thus takes the attitude that the object recently found circling the earth in a polar orbit probably was the last stage of Russia's Lunik III and not a reconnaissance satellite.

But the possibility that Russia some day might launch a spy-type satellite seems to be taken seriously by those whose duties will be to camouflage secrets on U. S. soil.

Spy satellites, when perfected, probably will be able to gather information by watching or by listening. They can watch by using either photographic or infrared equipment. They can listen with sensitive radios.

Another official said information from a spy satellite watching the U. S. would be useful to the Russians because it would enable the Soviets to verify reports from agents here. For the same reason, a spy satellite belonging to the U. S. would be valuable because information from some foreign sources often is inaccurate.

If a satellite with infrared equipment, which detects heat, spots a moving hot object, the interpretation could be "train." A large warm spot could be "city." An intense pinpoint could be "missile launching." A less-intense pinpoint could be "factory."

Infrared spy-systems, which work as well by night as by day, obviously pose a challenge to camouflage experts. They mean that ways must be found to hide the heat given off by such things as steel mills and ship piers. It is believed the U. S. is working on counter-infrared techniques that are designed to confuse.

Science News Letter, February 27, 1960

SCIENTIA INTERNATIONAL

NOVAS DEL MENSE IN INTERLINGUA

Selenologia.—Si, como il pare, le luna ha nulle atmosphera, il es possibile que le ultraviolette lumine solar resulta in le ionisation de su superficie, i.e. un cargation positive de ille supercie mesme e un cargation negative de particulas de pulvere que flottarea supra illo como un extense nube durante le horas de die. Un tal situation poterea causar grande difficultates al astronautas futur secundo Prof. Zdenek Kopal del Universitate Manchester in Anglaterra qui includeva iste e simile interessantissime speculationes in le discurso scientific presentate per ille al Prime Symposio International de Scientias del Spatio Cosmic a Nizza in le sud de Francia.

Technica de Radio.—In april 1959, le Laboratorio Radio-Scientific del Universitate Stanford in California succedeva pro le prime vice in le historia human a reciper un signal de radar ab le sol que illo mesme habeva emittite 17 minutas previemente. Iste facto non poteva esser publicate plus promptemente proque le producto immediate del experimentos in question esseva solmente un serie de bandas de registration magnetic de un massa chaotic de ruitos. Iste ruitos representava le emissiones de radio del corona del sol, e que illos includeva vermente le signales inviate ab Stanford poteva esser verificate solmente per complexe calculationes del typo que ha devenite possibile in nostre dies gratias al existentia de computatores electronic.

Cardiologia.—Micre doses de irradiation ionisante resulta in le formation de nove arteriolas e le dilatation permanente de arteriolas jam existente in le musculo del corde, con le resultato de un meliorate alimentation de illo con sanguine. Isto esseva originalmente constatate in experimentos con canes per duo medicos de New York. Tamen, le duo jam reporta le application de lor methodo a patientes human. Le resultatos pare esser incoragiante. Si le presente optimismo es justificate per observationes futur, le methodo pote render superflue le operationes de varie typos que ha como objectivo stimular un "affamate" corde a meliorar su alimentation, i.e. su provision de sanguine.

Statistica Vital.—Inter 1925 e 1954, circa 32.000 suicidios ha occurrite in le Citate New York. Le medios e methodos usate esseva: Gas in 11.038 casos, pender se in 6.241, precipitar se ab alte locos in 4.680, veneno in 4.104, armas de foco in 2.848, cultellos e simile instrumentos in 1.150. Altere methodos esseva necar se e jactar se in le via de vehiculos in motion. Multe suicidas usava simultaneemente duo o tres methodos.

Medicina Historic.—Dr. med. Chalke de London in Anglaterra opina que le humanitate occidental suffre depost circa 300 annos de un "epidemia de tuberculose". Iste epidemia, secundo Dr. Chalke, comenciava evanescer circa un seculo retro, longemente ante le disveloppamento de agentes chimotherapeutic contra tuberculose e etiam longemente ante le disveloppamento de altere efficace mesuras antituberculotic. Tal agentes e tal mesuras non ha causate le reduction del virulentia de tuberculose, sed—adde Dr. Chalke—illos pote accelerar le disparition complete del morbo.

Recercas de Cancere.—Cancere es responsabile pro un plus alte procentage del mortes de juveniles in le Statos Unite que non importa qual altere causa, excepte accidentes. Currentemente, 12 pro cento de omne le mortes in juveniles de etates de minus que 14 annos es causate per le un o le altere forma de cancere, incluse leucemia. Un numero considerabile de malignitates es presente al tempore del nascentia e ante illo. Ancora plus grande es le numero de canceres detegite clinicamente in patientes pediatric de minus que cinque annos de estate. Plus que un medietate de omne casos de leucemia juvenil occurre ante le estate de cinque annos.

Statistica Vital.—Plus que 5.800.000 citatanos del Statos Unite suffre de imperfectiones auditori. Quasi 110.000 es totalmente surde. Quatro pro cento del masculos ha imperfectiones auditori. Inter le femininas, le procentage correspondente es un tertio plus favorabile. On crede que iste differentia resulta del facto que plus grande numeros de masculos es implicate in accidentes e que le exposition a alte nivellos de ruito in le industria es, a generalmente parlar, un "privilegio" masculin.

Bacteriologia.—Le facto que bacterios in le stadio sporiforme pote superviver extreme temperaturas es generalmente cognoscite. Nunc, Doctores S. Zamenhof e S. B. Greer del Universitate Columbia in New York ha constatate que certe bacterios—non in le stadio de sporas—supervive sin apparente difficultate temperaturas de 135 C e plus, providite que illos es exponite a tales intra un vacuo plus o minus complete. Isto significa que projectiles inviate al luna pote contaminar ille corpore celeste si illos non es perfectemente sterile.

Entomologia.—Le lucta contra medicalmente e agriculturalmente nocive insectos esseva le thema de un reunion international de scientistas a Washington. Esseva a notar un certe sobriification del optimismo con que le expertos recommendava in recente decennios le uso (e le disveloppamento additional) de insecticidas chimic. Le rationes pro iste alteration de attitude es (1) le facto que multe insectos ha disveloppate alte grados de resistentia contra agentes chimic e (2) que multe tal agentes es nocive pro animales e plantas que es practicamente e sentimentalmente desirabile. Il pare que le futuro va vider un re-accentuation de methodos biologic in le lucta contra le insectos que es probabilementes le plus periculose del inimicos del homine. Inter altere reportos, le expertos a Washington audiva le description de un experimento comparative conducite per le Universitate McGill de Montreal in Canada. In iste experimento, tres complete insulas del Pacifico es implicate. In un insula, insecticidas chimic es usate pro combatter le peste de mosquitos. In le secunde, un agente biologic—specificamente un fungo—es utilisate pro le mesme objectivo. Le tertie insula remane sin interferentia systematic per le mano del homine. Le resultatos es non ancora cognoscite.

Biochimia.—Le chimia de enzymas deveni de plus in plus complexe. Certe tales, usque nunc reguardate como uniformemente representante le mesme structura, se revela como capace de multiple variationes. Recercatores del Universitate Brendeis in Massachusetts ha demonstrate per exemplo que le structura de lo que on designa genericamente como dishydrogenase lactic non es identic in varie species de animales e non mesmo in differente organos—per exemplo le corde e le musculo skeletic—del mesme animal. Il pare justificate previder que differentias in le strûctura molecular del dishydrogenase lactic va esser usabile in le reconstruction del interrelationes evolutional de varie species de animales. On va poter parlar del "evolution de dishydrogenase lactic" e similemente de altere enzymas e altere substantias biochimic.

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GENERAL SCIENCE

Science Youth Program

Schools and Home Lead In Motivating Students

By SHIRLEY MOORE

CERTAIN ATTITUDES and experiences encountered at school or in their homes are largely responsible for awakening the intense interest in science shown by hundreds of promising young people.

The catalysts that make a young person want to spend his life being a scientist have been difficult to pin down, but continued experience and accumulative records are yielding new and informative clues to the development of scientific interest and ability.

For example, when they were asked to describe what or who sparked their first real interest in science and at what age, finalists in the National Science Fair-International, coordinated by Science Service, have responded with a great variety of individual answers. When tabulated, the answers fall into a clear pattern.

Of nearly 1,000 teen-age finalists who answered the questions, 33 1/3% said that their schools and teachers started their enthusiastic response to the challenge of science. Typical answers were: Fifth grade studies of animal and plant life; a teacher's comment on achievements in experimental embryology; an experiment with electromagnets in science class at ten years of age; a biology teacher who encouraged projects; a ninth grade algebra teacher; field trips and lab classes in sixth and seventh grade.

More than a fourth, or 26%, of these talented boys and girls paid tribute to the stimulating influence of their homes and parents and of other family members in such phrases as: A relative who taught me how to extract square roots when I was eight years old; family interest in wildlife; my father, who always asked me "why"; at four, a gift of binoculars and my mother's reading about stars and bacteria; pre-school, from my father's work.

The next largest group, just over 12%, apparently were born-scientists or self-starters who described their progress in terms of: Six or seven years old when I found some brachiopods in the yard and took them to a museum to find out what they were; from the time I could take the vacuum cleaner apart; cannot remember not being interested; "It's just grown"; at eight, wanted to find out how a light bulb worked; just curiosity.

A chance to "fool around" with scientific equipment such as microscopes, chemistry sets, and radio kits inspired the initial interest of 9.3% of the finalists. Such equipment has run the gamut from very elementary apparatus and kits received as gifts or accessible at home to the instrumentation in a professional laboratory.

Books, magazines and other scientific literature show a steadily increasing influence each year, and have been an important factor in the development of 8.7% of the young people.

Science clubs and science fairs have caught the interest of 6.6%; and assorted influences such as trips to museums, National Parks, planetaria and laboratories, television science productions, community activities, etc., started slightly over 4%.

These hopeful young scientists estimated that their interest originally was captured at ages varying from 2 to 17, with the greatest number of beginners concentrated between 8 and 14.

Some unidentified characteristics of the age of ten, or fifth grade, may exert a special magic, for nearly 12% of the total group discovered the fascinations of science at that point. More than 60% had been bitten by the science bug *before* they reached junior high school (considered here as seventh, eighth and ninth grade).

An additional 35% joined the community of potential scientists during junior high school, with the ages of 12 and 13 (usually seventh and eighth grade) showing the highest peaks in the entire graph and accounting for 25% of the beginning of science-mindedness.

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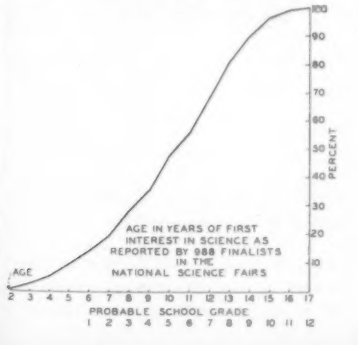
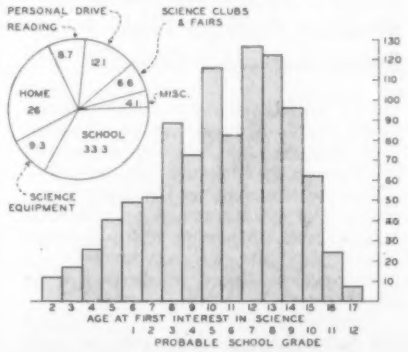




GENERAL SCIENCE

School Population Grows Twice as Fast as National

America's school-age population is growing more than twice as fast as the population of the nation and has reached an all-time high of 43,900,000 students.

The number of children from five to 17 years of age increased by 3.6% during the year preceding the opening of school in October 1959, while the total population of the United States increased only 1.7% during the same period.

Although school facilities have not increased at the same rate, the sixth annual survey of the U. S. Office of Education, "Fall 1959 Statistics on Enrollment, Teachers, and Schoolhousing in Full-Time Public Elementary and Secondary Day Schools," reports that encouraging improvement has been shown in classroom and general teacher shortage conditions.

Yet a 10.4% decrease is reported on scheduled completion of classrooms for the coming year. Also, for the year 1959-60, there are 5,900 more teachers with less than standard certificates. Many of these teachers seem to have been employed because of the shortage of those who are fully qualified. This shortage is now estimated at 195,000.

Science News Letter, February 27, 1960

GENERAL SCIENCE

New Awards at the National Science Fair

Two national societies have added their names to the growing list of organizations presenting awards at the National Science Fair-International.

At the 11th National Science Fair, to be held at Indianapolis, Ind., May 11-14, the American Chemical Society will award inscribed plaques plus $100 for the purchase of books and/or scientific equipment, and a subscription to the Journal of Chemical Education to the top boy and girl winners for best exhibits in chemistry. A boy and a girl alternate will receive plaques and subscriptions to the Journal.

Also, awards of $125 and $75 will be presented by the Society of American Bacteriologists at the national fair. These awards are to be used by the students for their scientific advancement. In addition, the winners and their schools will receive engraved plaques, and certificates of merit will be given to the winners and their teacher sponsors.

Summer job opportunities are being made available to young scientists through participation in fairs affiliated with the National Science Fair. The National Committee for Careers in Medical Technology has requested all pathologist directors and teaching supervisors of 702 AMA-Approved Hospital Schools of Medical Technology to cooperate where possible in offering summer laboratory jobs as awards for outstanding science fair projects in chemistry and biology and for exhibits related to clinical medicine.

Of the recently announced Honors Group of the 19th Science Talent Search for the Westinghouse Science Scholarships and Awards, 88% has been active in science fairs at the local, regional or national level, amassing a total of some 600 awards, 22 of them as finalists at the National Science Fair-International.

Science News Letter, February 27, 1960

MEDICINE

Peanuts Control Bleeding In Hemophilia Sufferers

PEANUTS CONTAIN a substance that controls bleeding in hemophiliacs, or "bleeders," two researchers report.

Hemophilia is a hereditary disorder characterized by delayed clotting of the blood and consequent difficulty in checking hemorrhage. It is inherited by males through the mother as a sex-linked trait. There are several types, depending on the particular blood deficiency that prolongs the clotting time.

An unknown peanut factor is reported in the British scientific journal Nature, 185: 469, 1960, to effectively control bleeding in persons suffering from the most common type, antihemophilic factor hemophilia.

Treatment with the peanut factor was reported by Dr. H. Bruce Boudreaux of Louisiana State University, Baton Rouge, and Vernon L. Frampton of the U. S. Department of Agriculture, New Orleans.

Dr. Boudreaux, himself a sufferer from this common type of hemophilia, found that eating a large handful of roasted peanuts brought about a rapid loss of tenderness in his knee, which had a blood-containing swelling.

Since then, he has taken peanuts in all available forms, including peanut butter, raw and roasted peanuts, whenever he has had a hemophilic attack. In each instance, he says, clinical symptoms were relieved in one or two days.

Whenever he has avoided peanut products, the tendency to bleed has recurred. Upon resumption of a peanut diet, bleeding is again controlled.

Dr. Boudreaux, who also reported successful treatment of several hemophilic patients with the peanut factor, has removed the active factor from peanut flour by extraction with 90% ethyl alcohol. The residue proved ineffective, whereas the alcohol-extracted material relieved clinical symptoms in one or two days in doses of 14 grams a day. This is the equivalent of one pound of peanuts.

Exactly what the beneficial peanut factor is has not yet been determined, but Dr. Boudreaux hopes his report will incite the interest of medical researchers to investigate further. Meanwhile he is continuing efforts to concentrate and identify the active factor.

Science News Letter, February 27, 1960

MEDICINE

Studies Fail to Link Smoking and Cancer

THIRTY-EIGHT SCIENTIFIC studies supported by the Tobacco Industry Research Committee give no evidence of a direct link between smoking and lung cancer.

The studies support the Committee's contention that "circumstantial or inferential data" on the existence of such a link are "not a substitute for experimental and clinical evidence based on direct observations."

The Committee, formed in 1954, claims that the experiences of the past six years, during which it has made grants to 90 scientists in 61 U. S. institutions, support the beliefs that: any role of cigarette smoking in lung cancer and certain other diseases has not been proved as causative; if tobacco has any role, it is uncertain, unidentified and unanalyzed.

The 38 studies are summarized in the Committee's 1959 report of the scientific director. The original reports were published in medical and scientific journals during 1959.

In one study, mice were exposed to smoke five times weekly for nearly two years with no resultant invasive cancers of the lung. Another test involved sewing pellets of tobacco into the cheek pouches of hamsters for long periods of time. Again, no cancerous growths were produced.

The Committee's report points out that much more research is needed to help clarify and define significant problems on research in this field, and to determine the best way to find the answers to them.

"All evidence," it says, "including that which demonstrates the gaps and uncertainties and contradictions in our knowledge, should be presented to the public honestly and fully. The individual can form his own considered opinion only on the basis of complete information."

The Journal of the American Medical Association, commenting editorially on smoking and lung cancer last December, said that neither the proponents nor the opponents of the smoking theory have sufficient evidence to warrant the assumption of an all-or-none authoritative position.

Science News Letter, February 27, 1960

TECHNOLOGY

Simulator Will Aid Study Of Roll-over Crashes

See Front Cover

A simulator has been developed at Cornell Aeronautical Laboratory to study motion and impact of passengers during roll-over crashes.

Test results indicate the velocity and impact point of occupants. A camera under a shroud outside the rear window records the motion of "dummy" occupants, as can be seen on the cover photograph of this week's SCIENCE NEWS LETTER.

Science News Letter, February 27, 1960

Questions

ASTRONOMY—When is the next lunar eclipse? p. 138.

MEDICINE—With what other disease has brucellosis recently become linked with? p. 136.

NUTRITION—What new method has been developed to package milk? p. 137.

Photographs: Cover, Cornell Aeronautical Laboratory, p. 135, University of Miami; p. 142, W. R. Grace & Co.

ELECTRONICS

Frog Sees Moving Objects

THE FROG'S EYE is a sophisticated information processor and works independently of the light level, a team of researchers at Massachusetts Institute of Technology at Cambridge have found. It processes a visual scene four ways and sends this processed information along the optic nerve to the frog's brain.

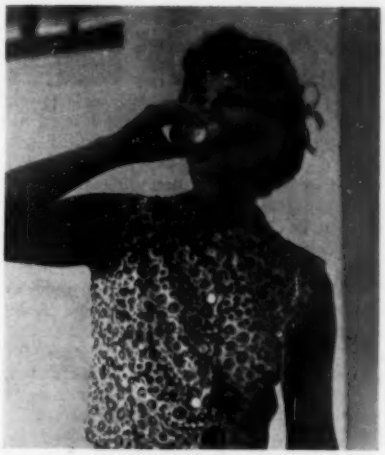
The research showed that the retina in the frog's eye is mapped by four sets of detectors:

Sustained contrast detectors spot sharp edges of objects lighter or darker than the general background. If the light blinks off, then on, these detectors again perceive the sharp edge. Convexity detectors, considered the most remarkable, spot small moving objects. But if a shadow momentarily falls across the object, the image is erased in the frog's eye until the object moves again. The more the "bug" curves outwardly, such as a hump made by wings; the stronger becomes impulses from these detectors. Objects lighter in color than the background produce almost no response unless they cast a shadow. Moving edge detectors spot large moving objects. If the object does not move, these detectors ignore it. Net dimming detectors are highly sensitive to changes in light levels. These spot shadows cast by overhead birds.

The research was conducted at M.I.T.'s Research Laboratory of Electronics by Dr. J. Y. Lettvin, H. R. Maturana, W. S. McCulloch and W. H. Pitts. It is reported in the Proceedings of the Institute of Radio Engineers, 47:1940, 1959.

Dr. Lettvin says it is difficult to describe what the frog's brain actually sees, after his eyes process the visual information. Such vision lies outside human experience. It is difficult to say whether human eyes also process the visual scene to extract specialized information. This is because of a lack of knowledge of the actual workings inside the human eye. In the painless experiment on the frog's eye, a delicate electronic probe was used to touch various fibers in a living frog's optic nerve. Signals transmitted along the fibers were displayed electronically on an oscilloscope.

Science News Letter, February 27, 1960



A SIP OF VACCINE—A University of Miami co-ed sips the new oral polio vaccine as Dade County's program to immunize 520,000 eligible residents begins. She is one of more than 7,500 students at the University who took the vaccine as they registered for the Spring semester.

PUBLIC HEALTH

Dade County Gets Vaccine

MORE THAN 500,000 residents of Dade County are participating in the live virus polio vaccine program now underway.

Each participant in this study group, consisting of those under 40 years, will swallow a cherry-colored and flavored trivalent vaccine developed by Dr. Herald Cox of Lederle Laboratories, Pearl River, N. Y.

The vaccine, it is hoped, will deliver a three-in-one punch. It will trigger each person's body to manufacture antibodies that fight all polio cripplers, types I, II and III.

Antibody levels of participants have been previously determined from 10,000 random blood samples. The antibody counts of these samples will later be compared with those taken after the program is complete to measure the effect of the vaccine.

Dade County, Fla., which includes Miami, has a longer polio season than most areas in the country, due to its warm weather. Although the incidence of polio has declined in the county through use of the Salk vaccine, that vaccine does not offer the hope of eradicating the disease or preventing its spread through the community.

Salk vaccine, made from killed viruses, is between 70% and 90% effective. Immunity produced by this vaccine is suspected to be shorter than the estimated five to seven years for the live virus vaccine.

The live polio virus vaccine project is sponsored by the Dade County Health Department, the Dade County Medical Association and the University of Miami School of Medicine.

Early in February more than 7,500 students swallowed the same vaccine in a mass feeding and pre-test at the University. The entire program should be completed by the end of April, although the vaccine will be offered to newborns and new residents on a continuing basis.

Science News Letter, February 27, 1960

ROCKETS AND MISSILES

Three-Nation Space Probes Are Planned

THE U. S. HAS tentative plans to buy British rockets to be filled with American instruments and launched by Australians at their Woomera range, an official of the National Aeronautics and Space Administration said.

Arnold W. Frutkin, director of NASA's office of international programs, told members of the Inter-American Defense Board in Washington that NASA "hopes" to complete this unusual multi-lateral program for studying the upper atmosphere.

The rocket to be purchased is the Skylark, a solid propellant type, unguided, and capable of carrying a 65-pound payload.

Mr. Frutkin also said the Australians have proposed they instrument some American rockets and satellites for special studies. He reported that Britain has already tentatively agreed to instrument perhaps three U. S. satellites during a two- to four-year period.

Science News Letter, February 27, 1960

GEOLOGY

1960 Iceberg Crop Is Expected to Be Light

FEWER ICEBERGS than usual will plague shipping off Newfoundland's Grand Banks this year.

Extremely light field ice conditions off Labrador indicate that this year's crop will be rather small, Lt. Cmdr. Robertson P. Dinsmore of the International Ice Patrol at Woods Hole, Mass., told SCIENCE SERVICE.

He said, however, that it is really impossible to predict exactly how many icebergs will float south of the 48th parallel and into the world's busiest shipping lanes each year.

Field ice conditions and iceberg conditions go hand in hand, he said, even though the two have entirely different origins. Field ice, small chunks of frozen sea water, never rises very high in the water. Icebergs, huge pieces of glaciers that break off into the sea, may tower high above the surface of the water despite having about 85% of their mass beneath the surface.

Their height above water makes icebergs especially prone to erosion by heavy waves. Heavy field ice tends to keep the water calm so that wave action on the bergs is kept to a minimum. The lack of much field ice off Labrador at this time, therefore, would indicate a rather light iceberg season.

The Ice Patrol, supported by 16 nations and run by the U. S. Coast Guard, maintains a close surveillance on the icebergs that enter the Grand Banks area throughout a season that runs roughly from late February through August. The Patrol was formed in 1914, two years after the Titanic had been sunk by collision with an iceberg.

Science News Letter, February 27, 1960

MEDICINE

Lawyer Charges Doctors Keep Inadequate Records

DOCTORS HAVE been charged with filing slipshod and incomplete medical records by a lawyer.

Hitting the general practitioner through a medium read by doctors themselves, Stanley D. Rose cites examples of inadequate medical reports submitted as evidence in GP, 21:175, 1960.

It is very common to receive medical reports with no indication of the age of the patient being examined, he stresses.

"I have had more than my share of reports on 'well-developed, well-nourished, obese, white females' with no indication as to whether they were 18 or 58 years old," he said.

Citing another example, lawyer Rose reports this medical booboo written by a doctor:

"I conclude that the patient has sustained a permanent disability of about 40%." It may be questioned, the lawyer suggests, whether few, if any, doctors who write such a sentence have given any thought to the meaning of what they are writing.

Suppose a man loses his left arm two inches from the shoulder. It can safely be assumed that he has suffered a 100% permanent impairment of his left arm. However, the permanent impairment of the whole man as a result of this injury is questionable, he emphasizes.

This man, it is agreed, suffered 100% impairment of the left arm. Assuming further that at the time of the accident, he was a $4,500-per-year truck driver, he is 100% disabled as a truck driver. But two years later, when the case is being settled in court, this man might be employed as a $6,000-per-year insurance salesman, with unlimited prospects. Obviously, there is no permanent disability at that point, lawyer Rose says.

An American Medical Association committee concluded that there is no practical comprehensive system for evaluating permanent impairment by body systems or of the whole man. The committee stated that a patient is "permanently disabled" when his actual ability to engage in gainful activity is reduced or absent because of impairment and no fundamental or marked change in the future can be expected. This is not a medical condition.

Science News Letter, February 27, 1960

TECHNOLOGY

Original Nursery Rhyme Protested English Taxes

THE NURSERY RHYME "Jack and Jill" was originally a sarcastic jab at a corruption of standards of measurement in 17th century England, the president of the American Association for the Advancement of Science said.

During the reign of Charles I, lavish spending exhausted the royal treasury, Dr. Chauncey D. Leake, assistant dean at Ohio State University, reported in a lecture on "Standards of Measurement and Nursery Rhymes" at the National Science Foundation in Washington.

To remedy the money shortage, Charles demanded the sales tax be increased. This type of tax severely affects the poor, who are least able to afford it, because it increases the price of bread, milk and other necessities of life, Dr. Leake pointed out. The poor of that period bought their cereal in amounts known then as "jackpots." A jackpot was originally so large that it took two hands to carry it away. A gill was two such jacks.

In order to increase the amount of taxes, the king's men decided to increase the number of taxable jacks and gills by reducing the amount of cereal each contained. Within a short time, a jackpot consisted of an amount of cereal hardly taxable. Since England, at that time, was an absolute monarchy, no one could directly criticize the Government. Therefore, the poor voiced their protests by composing the nursery rhyme Jack and Jill.

Commenting on present day standards of measurement in the United States, the Ohio State University scientist urged adoption of the metric system in this country "as soon as possible." What is needed most to establish such a standard, he emphasized, is agreement among those individuals who decide what a standard of measurement will be. When asked to predict when the world will adopt a uniform standard of measurements, Dr. Leake said:

"We are a rational people, we will probably get around to it within 1,000 years."

Science News Letter, February 27, 1960

MEDICINE

Undulant Fever May Be Involved in Heart Disease

BRUCELLOSIS, or undulant fever, may be involved in some cases of heart disease attributed to rheumatic fever.

Additional evidence to support this theory has been reported by investigators from the University of California Medical School, Los Angeles, and the Long Beach Veterans Administration Hospital.

Dr. Benjamin E. Konwaler, Dr. Charles M. Carpenter and Susumu Ohno reported experiments in which brucellosis caused heart damage to guinea pigs.

Experimental brucellosis was induced in 37 guinea pigs, which were autopsied 39 to 383 days after onset of the infection. Although no gross heart damage was observed, microscopic evidence of damage to heart tissue was found in 15 of the guinea pigs. The damage was similar to that observed in rheumatic fever.

In previous studies, 206 patients with heart disease were given a skin test with brucellosis organisms. Of this group 117 gave a positive test, indicating they had previously been infected with the Brucella germ. Sixty of this group had been diagnosed as having had rheumatic fever.

All this evidence suggests that brucellosis may sometimes contribute to heart disease, the investigators said. Symptoms of chronic brucellosis are often similar to those of rheumatic fever, they said.

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IN SCIEN

PUBLIC HEALTH

Americans Abroad Should Register for Census

AMERICANS TRAVELING abroad at the time of the 1960 Census in April should fill out a census form available at the nearest U. S. consulate or embassy.

A representative of the Bureau of the Census said that this move, though not required by law, later could prove to be valuable to the persons involved.

Census records, he said, have been used repeatedly to establish citizenship and age in the absence of birth records. Since 1935, nearly 3,000,000 Americans have used census records to prove their age to qualify for pensions or social security benefits. These persons could not produce a birth certificate or old family Bible record.

During the war, census records were used by other Americans to establish citizenship so they could get jobs in defense plants.

Servicemen stationed overseas and sailors at sea will be counted through Department of Defense machinery. This count of soldiers, sailors and airmen will be broken up and added into the proper state totals.

Servicemen in the U. S. will be counted as residents of the military base to which they are attached. They will not be counted by census takers who come to the homes of their families.

Crews of merchant ships at sea will fill out forms given to the captains of their ships. These forms will be processed back to the Bureau of the Census by the U. S. Maritime Administration.

Science News Letter, February 27, 1960

EDUCATION

Russian Schools Face Old American Problem

THE RUSSIAN EDUCATIONAL system is now facing a crisis met in the U. S. 40 years ago, Dr. John Turkevich, who will be acting U. S. scientific attache to the USSR this summer, told Science Service.

The problem: An increase in high school graduates trained primarily in liberal arts.

"We in the United States faced the problem partly by expanding our colleges," the Princeton University chemist said.

"The schools of the USSR have strong, uniform, academic training. They found out abruptly that they were graduating five times as many from secondary schools as they could accommodate in the universities . . . The USSR is not expanding its universities. So they have many disgruntled boys and girls."

To combat the problem, the USSR has begun vocation training and work programs in the secondary schools.

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NCE FIELDS

METALLURGY

Demand for Rare Earths Increases in Industry

THE RARE EARTHS, actually not at all rare in nature, are finding more and more jobs to do in industry, particularly in the field of nuclear ceramics. The demand for the 15 elements of this series will increase in the future.

This was the outlook presented in New York for these ceramic-like materials that have high melting points. This quality appears to make them suitable for such new uses as crucibles in which metals, glass and enamels can be melted, and also for jobs where a material must withstand high nuclear radiation. Rare earths can be used in control rods for nuclear reactors, and also as a radiation shielding ingredient in concrete.

G. L. Ploetz, supervising ceramist, and A. T. Muccigrosso, ceramist, both of General Electric Company's Knolls Atomic Power Laboratory, Schenectady, N. Y., told the American Institute of Mining, Metallurgical and Petroleum Engineers meeting that new electronic applications also will swell the demand for rare earths, also known as lanthanons.

Science News Letter, February 27, 1960

GENERAL SCIENCE

Russo-U. S. Pact Might Prevent Nuclear War

IF RUSSIA and the U. S. could mutually agree on some ground rules covering the use of atomic weapons, it would go a long way toward preventing the chain reaction that could lead to an all-out nuclear war.

Prof. Leo Szilard, physicist at the University of Chicago and one of the men who helped develop the U. S. atom bomb, suggests that the two countries impose restrictions upon themselves. These restrictions must be such that neither country would gain by violating them.

To reduce chances that some minor disturbance could trigger a major war, Prof. Szilard suggests that Russia and the U. S. first adopt an "adequate philosophy" of what constitutes a permissible threat. This being done, both nations' points of view would shift and both governments would come to look upon allied nations as "potential liabilities." This would follow a political settlement between the two nations aimed at eliminating intervention.

Then a "one for one" principle must be accepted whereby one nation would retaliate against the other by nuclear bombing of a specified city. The city would be named 30 days in advance, to give residents a chance to move out and to enable the government to set up emergency accommodations elsewhere. These nuclear blows would be aimed at property destruction. The other nation would be obliged to strike back at a city, or several cities having the same aggregate population, and under the same conditions of forewarning. Otherwise the war would get out of control and chaos would result.

Prof. Szilard said such agreements may be possible as the world moves out of the present moment in the atomic calendar and both nations develop rockets that can be launched from railroad trains. These long-range rockets will become the controlling factors in tomorrow's military thinking and planning. Presumably these movable rockets will make it impossible for one nation, in a surprise attack, to cripple the retaliatory ability of the other.

Prof. Szilard's theory is detailed in the Bulletin of the Atomic Scientists, 16:59, 1960. The editor's introduction hails him as being able to "think years ahead of his contemporaries."

Science News Letter, February 27, 1960

ENGINEERING

A-Plants Now Compete In High-Fuel-Cost Areas

ELECTRICITY NOW can be generated economically with atomic power in some areas where conventional fuel costs are high.

A report prepared by the Atomic Energy Commission for the Congressional Joint Committee on Atomic Energy shows that competitive nuclear power now is possible with pressurized water reactors. This conclusion is based on quotations made to the Commission by reactor and core manufacturers. If started today, a 300,000,000-watt atomic powerhouse would be competitive over its lifetime in high-fuel-cost areas, the Commission said.

Water-cooled reactors "in the reasonably near future" may also be able to produce electricity at competitive prices in high-cost areas where large, single, powerhouse units are needed.

The Commission anticipates at least one more pressurized-water prototype power plant will be built. It is expected to incorporate technical advances learned from operation of the Shippingport, Pa., Indian Point, N. Y., and Rowe, Mass., commercial nuclear power plants now in operation or being built. Design of such a plant could start in 1962.

Three boiling-water reactors are now planned. One manufacturer advised the Commission that a 300,000,000-watt plant of this type could be built now on a fixed-price basis and "may produce" competitive electricity in high-fuel-cost areas.

As for other reactor types, the Commission estimated competitive power in high-fuel-cost areas might be achieved by the middle 1960's for organic-cooled reactors, by the late 1960's or early 1970's for sodium-cooled reactors, and by the early 1970's for gas-cooled reactors using enriched fuel.

A greatly improved fuel element, however, must be developed before sodium-cooled thermal reactors will approach their economical potential.

Science News Letter, February 27, 1960

METALLURGY

Beryllium Detector Helps Prospectors Find Ore

A BERYLLIUM DETECTOR has been perfected to help prospectors find new deposits of this space-age element. Beryllium, a silver-white, hard, workable metal, is sought after for space uses because it combines a high melting point with high strength and light weight.

Developed at the University of Manitoba, Winnipeg, Canada, the Berylometer uses "hard" gamma rays emitted by radioactive antimony to bombard a rock sample. If beryllium is present, these gamma rays, which are at least 1,600,000 electron volts in strength, force the metal to release neutrons. A scintillator counts the released neutrons. No other element can interfere to give a false reading.

Louis and Pauline Moyd, Yonkers, N. Y., consultants, told the American Institute of Mining, Metallurgical and Petroleum Engineers in New York that the portable instrument passed the field tests they gave it.

The instrument detected three different kinds of known beryllium deposits, and several discoveries were made during the tests. The instrument also proved the absence of significant amounts of beryllium that had been erroneously reported earlier because of faulty chemical or spectrographic analyses or incorrect mineral identifications.

In one case, large boulders in a relatively inaccessible glaciated area were checked. The boulders were covered by lichen—tiny plant life. More than a hundred were checked before one, then several nearby, produced indications in the instrument. These were later found, through special assays, to have rich concentrations of white beryl.

The dectector may never equal the Geiger counter's prominence as an amateur prospector's aid, however. Its radioactive heart means the user must have special training and a license. The radioactive antimony decays at a known rate and must be replaced every four months. It also requires special handling in transportation, storage and use.

Science News Letter, February 27, 1960

NUTRITION

Tasty Frozen Milk Becomes Reality

UNIVERSITY OF WISCONSIN dairy scientists have developed a method of producing frozen concentrated milk and reports indicate it has taste appeal. The processing method duplicates many of the steps for sterilization of concentrated milk. High quality raw milk is pasteurized, homogenized and concentrated to contain 36% total solids. It is then packaged in cans and undergoes another heat treatment. After this, the canned concentrate is cooled and frozen. When stored at ten degrees Fahrenheit, the milk retains its flavor for at least three and one-half months, University scientists said.

Science News Letter, February 27, 1960

ASTRONOMY

Total Lunar Eclipse Due

A total eclipse of the moon, visible in the U. S., will occur through March 12-13. The full moon will fade to a dull red as it passes over the earth's shadow.

By JAMES STOKLEY

A TOTAL ECLIPSE of the moon, the first visible generally in the United States and Canada in more than three years, is the main event on the celestial calendar for March. During the night of March 12-13 the full moon will fade to a dull red as it passes through the shadow of earth.

Over most of North America the eclipse will occur early Sunday morning, but on the Pacific Coast the beginning will come before midnight.

The planets can be observed in the early morning hours. None of those visible to the naked eye arise before midnight in March.

However, the stars and constellations of late winter shine in their full glory during the evening. These are indicated on the accompanying maps, which show the sky as it looks about ten p.m., your own kind of standard time, about March 1, an hour earlier at the middle of the month and two hours earlier at the end.

The brightest star is Sirius, the dog star, in Canis Major, the great dog, toward the south. A little higher is the lesser dog, Canis Minor, with the star called Procyon. Toward the right is the brilliant constellation of Orion, the warrior, with two stars of the first magnitude. Betelgeuse is above and Rigel below; between them are the three stars that form Orion's belt.

Taurus, the bull, is farther to the right. This contains the star Aldebaran, distinctly red in color, which is part of a V-shaped group called the Hyades. These outline the bull's face, as it was shown on the old star maps, which depicted the imaginary figures around the stars.

Auriga Is Right of Gemini

Well above Taurus are Gemini, the twins, with Castor and Pollux, but only the latter star is of the first magnitude. And a little farther to the right, shown on the northern sky map, is Auriga, the charioteer, with brilliant Capella.

The familiar figure of the great dipper, which is part of Ursa Major, the great bear, is high in the northeast. At the left are the pointers, whose direction, down and to the left, leads to Polaris, the pole star, which always stands over the North Pole of the earth. The line of the dipper's handle curves toward the right, to another first-magnitude star, Arcturus, in Bootes, the bear-driver.

There are also two first-magnitude stars in the southeastern sky. Well up toward the zenith is Leo, the lion. The western part of this constellation forms a sub-group called the sickle, because it has the shape of that agricultural implement. In the downward-pointing handle of the sickle is Regulus. Farther to the left is Denebola, a second-magnitude star in the lion's tail. Virgo, the virgin, is below it with Spica, close to the horizon. Spica is a star of the first magnitude, but here its low altitude very much dims its light.

As for the planets, Jupiter is now of magnitude minus 1.7. It rises about four hours ahead of the sun, to become prominent in the southeastern sky. About an hour later it is followed by Saturn, about a tenth as bright although still of the first magnitude. Both planets are in the constellation of Sagittarius, the archer. Mars comes up a little later, in the next-door constellation of Capricornus, the sea goat. By that time morning twilight has begun, making Mars a rather difficult object to observe.

Venus rises still later, and is about ten degrees above the horizon at sunrise. Its magnitude is minus 3.3, or more than four times as bright as Jupiter. Thus it is fairly easy to locate Venus, aided by a clear view low in the southeast.

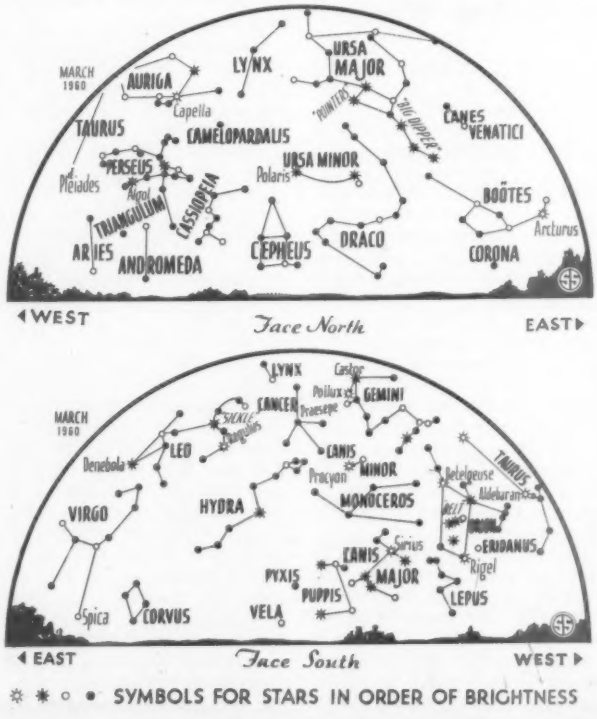
The total eclipse of the moon on the night of March 12-13 is the first of four eclipses this year, and the first of two this month. On March 27, the moon will pass partly in front of the sun, producing a partial solar eclipse. That will be visible, however, only from Antarctica, Australia and certain parts of the Indian Ocean.

The moon will be new at that time, for a solar eclipse can occur only at new moon. That is when the moon is in the same direction as the sun; and only then can it pass in front.

When the moon is full it is in the opposite direction from the sun and its sunlit hemisphere is turned completely toward us. Only then, of course, can it enter the earth's shadow, so a lunar eclipse always occurs at full moon. Thus it will be in this phase on the evening of March 12.

Soon after midnight by Eastern Standard Time, or one, two or three hours earlier, in the Central, Mountain and Pacific time belts, the moon enters the outer part of the earth's shadow, the penumbra. Then a lunar observer would see the earth beginning to hide the sun, but looking from the earth, little effect can be seen on the moon.

At 1:38 a.m., EST, March 13 (12:38 a.m., CST; 11:38 p.m., MST, March 12, or 10:38 p.m., PST) the eastern edge of the moon begins to enter the dark inner shadow, the umbra, where the earth is completely hiding the sun. For about an hour the curved edge of the shadow will slowly creep across the moon. At 2:41 a.m., EST, March 13, the moon will be completely shaded, and the total eclipse will commence. This is shown



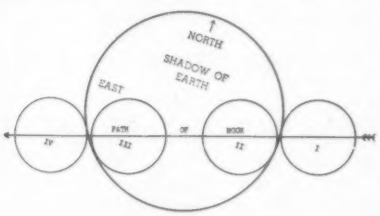
in the accompanying diagram, where I is the first contact of the moon with the shadow, and II the beginning of the total phase.

The moon will remain in the shadow for 95 minutes, but it will not disappear from view. The earth's shadow is not completely dark, because the atmosphere surrounding our planet acts as a prism to bend sunlight around into the shadow. On the way through the air, some of the blue rays of light are scattered, and that gives the sky its blue color in daytime. With the proportion of blue thus reduced, the light that passes into the shadow is reddened, and that falls on the eclipsed moon, to give it a coppery red hue.

Position III, as shown on the diagram, is the end of the total eclipse. This happens at 4:15 a.m., EST, March 13, as the southeastern edge of the lunar disc begins to emerge from the shadow. As at the beginning, you will again see the shadow creeping across the moon. Then comes the end of the total phase, at 5:18 a.m., EST (IV), as the moon is clear of the umbra. It will remain in the penumbra for more than an hour and then the moon will shine with its full brilliance, unless it has set.

During a total eclipse the moon cools off rapidly. When it is full, the center of the disc, where the sun has been shining continually for a week, is at a temperature of about 212 degrees Fahrenheit, the boiling point of water. But during the eclipse, it drops to about 160 degrees below zero Fahrenheit. Unlike the earth, the moon has no atmopshere to serve as a protective blanket.

Since last December, the sun has been moving northward in the sky. It reaches the halfway point, when it stands directly over the equator, on Sunday, March 20, at 9:43 a.m. EST. This is the vernal equinox, the beginning of spring in the Northern Hemisphere. In countries south of the equator, it is the beginning of autumn.



Total Eclipse of Moon— Night of March 12-13, 1960

The large circle represents the shadow of the earth, and the small circles, I, II, III and IV, indicate the successive positions of the moon as it passes through the shadow. The four phases shown occur at the following times:

	EST	CST
I	1:38 a.m. 3/13	12:38 a.m. 3/13
II	2:41 a.m. 3/13	1:41 a.m. 3/13
III	4:15 a.m. 3/13	3:15 a.m. 3/13
IV	5:18 a.m. 3/13	4:18 a.m. 3/13
	MST	**PST**
I	11:38 p.m. 3/12	10:38 p.m. 3/12
II	12:41 a.m. 3/13	11:41 p.m. 3/12
III	2:15 a.m. 3/13	1:15 p.m. 3/13
IV	3:18 a.m. 3/13	2:18 a.m. 3/13

(Continued on p. 141)

• Books of the Week •

For the editorial information of our readers, books received for review are listed. For convenience purchase of any U. S. Book in print, priced at 95¢ or over, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ADMINISTRATION: Procedures and School Practices for the Academically Talented Student in the Secondary School—Charles E. Bish, Project Dir.—*N.E.A.*, 223 p., paper, $1.25. Discusses the specific needs of the more able student.

ATLAS OF BACTERIAL FLAGELLATION—Einar Leifson—*Academic*, 171 p., illus., $7. Shows shape and arrangement of the flagella on representative strains of all available species of bacteria.

THE BEAR FAMILY—George F. Mason—*Morrow*, 96 p., illus. by author, $2.75. Informative story about the origin, anatomy and habits of American black bear, grizzly, polar and Alaskan brown bear.

DICTIONARY OF THE AMERICAN INDIAN—John L. Stoutenburgh, Jr.—*Philosophical Lib.*, 462 p., $10. Comprehensive source book on American Indian terms, from Aatsosni to Zuni Pueblo.

THE DISTURBED CHILD: Recognition and Psychoeducational Therapy in the Classroom—Pearl H. Berkowitz and Esther P. Rothman—*N. Y. Univ. Press*, 204 p., $4. Concise study of early diagnosis and treatment of the emotionally unstable child.

THE ECLIPSE OF COMMUNITY: An Interpretation of American Studies—Maurice R. Stein—*Princeton Univ. Press*, 354 p., $6. Study of the changing American community, including slums, suburbia, southern towns and the military communities of World War II.

ENCYCLOPEDIA OF MEDICAL SYNDROMES—Robert H. Durham, foreword by T. R. Harrison—*Hoeber*, 628 p., $13.50. Brief descriptions of clinical disease patterns, with cross references by synonyms and index by classifications.

EPIDEMIC DISEASES—A. H. Gale—*Penguin*. 159 p., paper, 95¢. History of virus and bacterial diseases in England, from the plague in 17th century to the polio and influenza of today.

ESSENTIALS OF HEALTHIER LIVING: A Realistic College Text in Personal and Community Health—Justus J. Schifferes, foreword by Howard R. Craig—*Wiley*, 335 p., illus., $5.50.

THE FOREST RANGER: A Study in Administrative Behavior—Herbert Kaufman—*Johns Hopkins Press* for Resources for the Future, 258 p., map, $5. Focus on organization of successful public resource management.

FROM TIN FOIL TO STEREO: Evolution of the Phonograph—Oliver Read and Walter L. Welch—*Sams*, 524 p., illus., $9.95. Chronological developments in the phonograph industry, from early patents to debate of stereo disc vs. tape.

FUNDAMENTALS OF ELECTRICITY—Wynne L. McDougal, Richard R. Ransom and Carl H. Dunlap, 4th ed. by Kennard C. Graham—*Am. Technical Soc.*, 4th ed., 342 p., illus., $4.75. Fully revised and expanded, with new chapters on electric waves and automation devices.

THE FUTURE OF SCIENCE, with a "Self-Portrait" of the Author—Bertrand Russell—*Philosophical Lib.*, 86 p., $2.75. Reprint of 1924 essay, and transcript of a recent BBC interview.

A HANDBOOK OF BRITISH FLOWERING PLANTS—A. Melderis and E. B. Bangerter, Eds.—*Abelard-Schuman*, 360 p., illus., $10. Reference for field and study, with plates showing some 240 specimens in color.

HISTOCHEMISTRY: Theoretical and Applied—A. G. Everson Pearse—*Little*, 2nd ed., 998 p., illus., $20. Covers the whole of histochemistry as applied to tissue sections, and evaluates available methods.

HISTORICAL GEOLOGY—Carl O. Dunbar—*Wiley*, 2nd ed., 500 p., illus., $7.95. Includes new advances in geochronology, the cosmic history of the earth, and new discoveries in paleontology.

THE HYDROGEN BOND—George C. Pimentel and Aubrey L. McClellan—*Freeman*, 475 p., illus., $11.40. Complete coverage of the subject, with annotated bibliography of more than 2,300 references.

IN AND OUT OF THE IVORY TOWER: The Autobiography of Richard B. Goldschmidt—*Univ. of Wash. Press*, 352 p., illus., $5.75. Records eighty years of zoologist's discoveries in laboratory and field.

MANAGING YOUR CORONARY—William A. Brams—*Lippincott*, rev. ed., 175 p., illus. by Hertha Furth, $2.95. About prevention, care and treatment of heart and circulatory diseases.

NEW AND NONOFFICIAL DRUGS 1960—Evaluated by A.M.A. Council on Drugs—*Lippincott*, 768 p., $3.35. Annual compilation of available information on drugs, including their therapeutic, prophylactic and diagnostic status.

THE NTH COUNTRY PROBLEM AND ARMS CONTROL: A Statement by the NPA Special Project Committee on Security through Arms Control and A Technical Report—W. Davidon, M. Kalkstein and C. Hohenemser—*Nat. Planning Assn.*, 60 p., paper, $1. See story p. 131.

NUCLEAR POWER PLANT—E. Openshaw Taylor—*Philosophical Lib.*, 184 p., illus., $7.50. Summarizes world energy requirements, nuclear reactor physics, instrumentation and control, and the economics of nuclear power.

OPTICAL MINERALOGY—Paul F. Kerr—*McGraw*, 3rd ed., 442 p., illus., $8.50. Extensive revision of Rogers and Kerr's work, covers new discoveries and developments, such as the polarizing microscope. Mineral descriptions rewritten and extended.

AN OUTLINE OF UNITED STATES PATENT LAW—Richard E. Brink, Donald C. Gipple and Harold Hughesdon—*Interscience*, 280 p., $7.50.

Covers material related to obtaining a patent and enforcing the rights granted under it.

PARKINSON'S DISEASE: Its Meaning and Management—Lewis J. Doshay—*Lippincott*, 224 p., illus., paper, $1.45. Popular account of current concepts of the nature of the disease, and the value of medication and therapy.

PERSPECTIVES ON GOVERNMENT AND SCIENCE: The Annals, January 1960—Norman Wengert, Ed.—*Am. Acad. of Political and Social Science*, 204 p., $3; paper, $2. Analyzes space research, science and foreign policy, scientific manpower, and other aspects of government and science.

PLANNING AMERICA'S SCHOOL BUILDINGS—AASA School Building Commission—*Am. Assn. of School Administrators*, 229 p., illus., $6. Presents advanced thinking among school architects, superintendents and people concerned with today's school curriculum.

PLASTICS ENGINEERING HANDBOOK—Society of the Plastics Industry—*Reinhold*, 3rd ed., 565 p., illus., $15. Up-to-date reference on plastics materials, methods and fabrication.

THE POLITICAL ECONOMY OF NATIONAL SECURITY: A Study of the Economic Aspects of the Contemporary Power Struggle—James R. Schlesinger—*Praeger*, 292 p., $5. Analysis of the "cold war."

POLYSACCHARIDES IN BIOLOGY: Transactions of Fourth Conference—George F. Springer, Ed.—*Macy*, 326 p., illus., $5.95. Discussion on chondroitin sulfates, heparin, the mast cell, and sulfated polysaccharides.

PRACTICAL PHOTOGRAPHY—Robert A. McCoy—*McKnight*, 291 p., illus., $4. For beginners.

PROGRESS IN INORGANIC CHEMISTRY, Vol. I—F. Albert Cotton, Ed.—*Interscience*, 566 p., illus., $14.50. Articles on leading research in the field.

THE RADIO AMATEUR'S HANDBOOK—Staff of American Radio Relay League—*Am. Radio*, 37th ed., 584 p., index, $6; paper, $3.50. Standard manual of amateur radio communication.

THE SEA OFF SOUTHERN CALIFORNIA: A Modern Habitat of Petroleum—K. O. Emery—*Wiley*, 366 p., illus., $12.50. Brings together material on various aspects of the sea floor, the water, and marine life.

Science News Letter, February 27, 1960

Total Lunar Eclipse

(Continued from p. 139)

Celestial Time Table for March

2	7:32 p.m.	Algol (variable star in Perseus) at minimum brightness
5	6:06 a.m.	Moon in first quarter
	9:00 p.m.	Moon farthest, distance 251,300 miles
10	4:00 p.m.	Mercury in same direction as sun
13	3:26 a.m.	Full moon, total lunar eclipse
17	3:38 a.m.	Algol at minimum
19	2:00 a.m.	Moon nearest, distance 229,800 miles
20	12:27 a.m.	Algol at minimum
	1:41 a.m.	Moon in last quarter
	6:00 a.m.	Moon passes Jupiter
	9:43 a.m.	Sun over equator; spring commences in Northern Hemisphere
21	9:00 a.m.	Moon passes Saturn
22	9:17 p.m.	Algol at minimum
23	11:00 p.m.	Moon passes Mars
25	7:00 a.m.	Moon passes Venus
	6:06 p.m.	Algol at minimum
27	2:38 a.m.	New moon, partial solar eclipse

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, February 27, 1960

New Machines and Gadgets

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 1028. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

TUNE-UP KIT for service station mechanics contains in one compact portable steel cabinet the following: cam-angle tachometer, combination power timing light, volt-amp tester, and cylinder compression testing unit. Equipped with a carrying handle, the kit is 14½ inches high, 16½ inches wide, 4 inches deep at the top and 8 inches deep at the bottom.

Science News Letter, February 27, 1960

LAWN SPRINKLER of aluminum and plastic operates on turbine action, distributing water in a fine mist to a heavy rain over an area up to 2,500 square feet. The lightweight unbreakable sprinkler has no loose parts and fits any standard garden hose.

Science News Letter, February 27, 1960

TENSION-IMPACT TESTER for plastics and ceramics has a pendulum hammer with a two-jaw gripping device that holds the specimen during the downward swing. At the moment of impact, one part of the gripper is arrested by a stop. The hammer continues its swing with the other part of the gripper and the specimen is pulled apart. Resistance to the tensile-impact force is shown on a dial.

Science News Letter, February 27, 1960

CARRYING CASE-STORAGE CABINET, shown in the photograph, for protection of delicate electronic components is made of non-breakable polyethylene. The

front of the case is a transparent plastic sheet that slides up or down to give access to the drawer or the shelves. Trays accommodate large components as well as tiny and easily lost parts.

Science News Letter, February 27, 1960

CAMP PANTRY of aluminum weighs 25 pounds, is 12½ inches high, 21 inches wide and 14 inches deep. Two sides swing down on chain supports. On one side is mounted a two-burner LP gas stove. The other sides serves as a cutting block. Five inside storage compartments contain utensils, plates and cups for six, plastic food savers, and an 18-piece aluminum cooking kit.

Science News Letter, February 27, 1960

PARTY LIGHTS consist of eight transparent white plastic globes, with different colored bulbs, attached to 25 feet of outdoor wire. The durable lights may be strung from any convenient support both indoors and outdoors to decorate patios, cook-outs, barbecues, lawn fetes, or costume parties.

Science News Letter, February 27, 1960

AUTO BELT TENSION GAUGE enables quick adjustment of belt tension to manufacturers' specifications, assuring maximum operating efficiency of a car's belt-operated accessories such as cooling fan, generator, power steering, and water pump. The 8½-inch gauge consists of an aluminum alloy body, a plunger operating against a coil spring, a dial, and arms that engage the belt.

Science News Letter, February 27, 1960

POLYETHYLENE DISHPAN, 14½ by 12 by 5⅛ inches, has an easy-lift handle rim. In one corner is a plastic flap, lying flush. A flip of the finger brings the flap forward, creating a safety silverware soak compartment.

Science News Letter, February 27, 1960

Nature Ramblings

By HORACE LOFTIN

"OH, GIVE me a home where the buffalo roam, where the deer and the antelope play . . ."

An animal geographer would have a hard time figuring out just where such a home might be if he were not familiar with the erroneous names we Americans use for our wildlife. There are no buffalo in the United States: those big beasts that made Buffalo Bill famous were bison. Likewise, we do not have antelope. The creature which inherited this misnomer is the pronghorn.

Strictly a North American mammal, the pronghorn is distinct from the antelopes of the Old World and is placed by zoologists in a family of its own. Its chief claim to rarity is its peculiar set of horns. True antelopes possess unbranched horns of permanent bone. Not so the pronghorn. As

At Home on the Range

his name implies, his horns are branched into two prongs. And unlike true antelopes, the horns are shed each year, in the manner of deer.

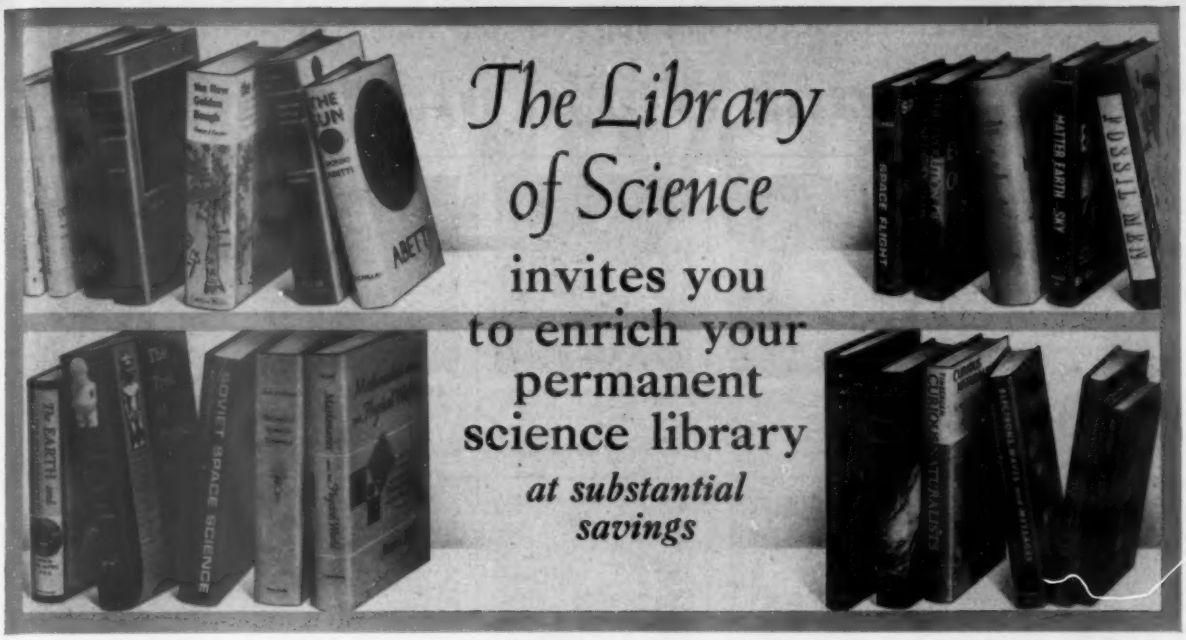
Pronghorns are social animals, often seen in bands ranging up to 100 or more individuals where they have been protected from over-hunting. Their chief defense is their great speed. They can travel for long distances at 35 to 40 miles per hour.

They have actually been clocked at better than 60 miles per hour for short spurts. So aside from the hunter's rifle, healthy adults have few serious enemies on the open range.

Trouble with predators begins in the spring, when the young are born. The fawns, usually twins, remain hidden for about two weeks after birth. Their grayish brown coat is an excellent camouflage.

Under natural conditions, however, the amount of predation is closely in line with the surplus number of young pronghorns. Too many pronghorns would mean a weak and poorly fed herd. So by reducing excess numbers, predators may actually render a service to the well-being of the pronghorn herd. Within a month, the fawns are able to run behind their mothers.

Science News Letter, February 27, 1960



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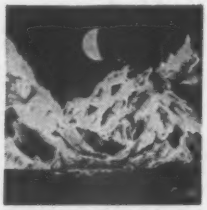

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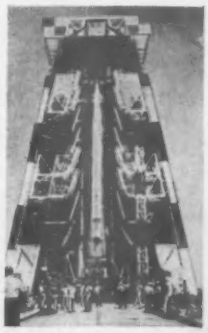

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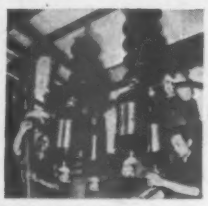

ELECTRICITY. From Benjamin Franklin's kite and keys to the electrons of Bohr and Langmuir, you follow the discovery of the amazing silent force that keeps our world running.

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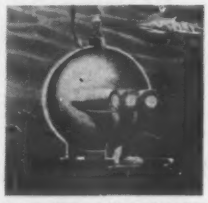

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